

1 IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
2

3 In the Application of)
4 Entwistle, et al.) Examiner: John K. Fristoe, Jr.
5)
6 for VALVE ARRANGEMENT) Group Art Unit: 3753
7)
8) Confirmation No.: 7090
9)
10 Serial No.: 10/573,873) Our Docket No.: 6495-0155WOUS
11)
12 Filed: March 29, 2006)
13

14 Hartford, Connecticut, April 2, 2009
15

16 Mail Stop APPEAL
17 Commissioner for Patents
18 P.O. Box 1450
19 Alexandria, VA 22313-1450
20

21 **APPEAL BRIEF**
22

23 Dear SIR:

24 Appellants respectfully submit the following Appeal Brief in
25 the above-identified application.

Application Serial No.: 10/573,873
Notice of Appeal dated: February 6, 2009
Appeal Brief dated: April 2, 2009

(I) Real Party in Interest

2 The real party in interest in the present application is Danfoss
3 A/S, as evidenced by the assignment recorded at the United States
4 Patent and Trademark Office March 29, 2006, Reel 017756 / Frame
5 0916.

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Application Serial No.: 10/573,873
Notice of Appeal dated: February 6, 2009
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(II) Related Appeals and Interferences

There are no other Appeals, Interferences, or judicial proceedings, known to any inventor, attorney, agent or other person substantively involved in preparation or prosecution of the application, which will directly affect or be directly affected by or have a bearing on the Board's decision on the pending Appeal.

Application Serial No.: 10/573,873
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(III) Status of Claims

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Claims 1-10 are pending. Claims 2-10 depend from claim 1.

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Claims 1-5 and 8-10 are rejected under 35 USC § 102(b) as anticipated by Tan (U.S. Patent No. 5,687,759); claims 6 and 7 are rejected under 35 USC § 103(a) as obvious over Tan in view of Kubiak (U.S. Patent No. 4,025,045).

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(IV) Status of Amendments

2 No amendments have been filed after final rejection.

3 The amendment filed June 12, 2008 has been entered in the
4 application, but was not considered by Examiner, as evidenced by the
5 grounds for rejection stated in the first paragraph on page 3 of the
6 Final Office Action issued September 8, 2008.

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(V) Summary of Claimed Subject Matter

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Referring to the Specification and Drawings, the present

3 invention relates to a suction nozzle arrangement 18 (page 7, line 32) that is provided in a pilot-controlled valve arrangement 1 (page 6, line 4), as shown in Appellants' Figure 1. The suction nozzle arrangement is disposed in a flow path between an inlet connection 3 (page 6, line 5) and an outlet connection 4 (page 6, line 5). The suction nozzle arrangement 18 is disposed at one

14 end of a channel arrangement 14 (page 7, line 1) formed in the pilot-controlled valve arrangement 1. A pressure chamber 11 (page 6, line 24) is disposed at the other end of the channel arrangement 14. A pilot valve 15 (page 7, line 4) is disposed in the channel arrangement 14. When the pilot valve 15 is first opened, fluid flows from the pressure chamber 11 to the outlet connection 4 through the channel arrangement 14 and the suction nozzle arrangement 18. Removing fluid from the pressure chamber 11 lifts a valve element 6 (page 6, line 9) from a valve seat 7 (page 6, line 9), opening a closing device 5 (page 6, line 8) disposed in the flow path from the inlet connection 3 to the outlet connection 4.

26 The fluid flowing through the
27 flow path interacts with the suction
28 nozzle arrangement 18 to suck fluid from

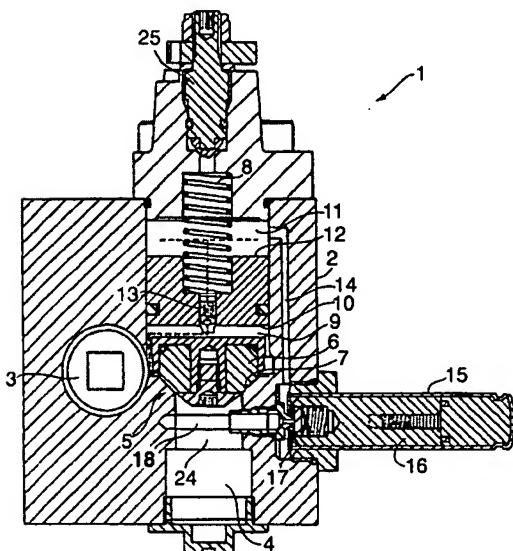


FIG. 1

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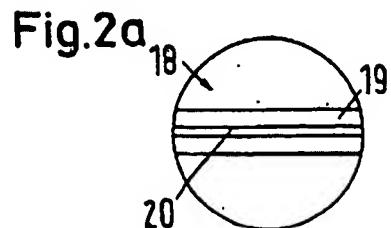


Fig. 2a

1 *the pressure chamber 11 through the channel arrangement 14.* (page 2,
2 line 25 to page 3, line 17 and page 7, lines 32-33). In one embodiment,
3 as shown in Appellants' Figure 2a, the suction nozzle arrangement 18
4 has a pipe 19 (page 8, line 3) extending across the flow path; the pipe
5 19 has a slot 20 (page 8, line 6) directed toward the outlet connection
6 4, through which the fluid is sucked.

7 Locating Appellants' suction nozzle arrangement 18 *in* the flow
8 path between the inlet connection 3 and the outlet connection 4 is
9 what causes the *suction* of Appellants' suction nozzle arrangement 18.
10 The suction occurs because flow velocity *in* a flow path is higher than
11 flow velocity at the wall of the flow path. Thus, Bernoulli's principle
12 causes static pressure to be lower in the middle of the flow path than
13 at the boundary of the flow path. Thus, locating the suction nozzle
14 arrangement 18 *in* the flow path advantageously ensures that the
15 pressure in the pressure chamber 11 remains at a reduced value while
16 the closing device 5 is opened. The suction nozzle arrangement 18
17 thereby prevents heavily varying performance during opening (valve
18 chatter), which is known to be a deficiency of previous pilot-
19 controlled valves. (page 3, lines 8-18 and page 2, lines 15-18).

20 Advantageously, the suction nozzle arrangement 18 includes a
21 suction nozzle directed toward an outlet connection to block fluid
22 entry into the channel arrangement 14. (page 8, lines 27-31).

23 **Claim 1** recites a valve arrangement 1 with a housing 2, an inlet
24 connection 3 and an outlet connection 4, which are connected with
25 each other via a flow path, in which is located a closing device 5,
26 which has a valve seat 7 and a valve element 6 interacting with the
27 valve seat 7, the valve element 6 being loaded in the direction of the
28 valve seat 7 by a resetting device 8 and being acted upon on the side

1 facing the valve seat 7 by a pressure in a first pressure chamber 9,
2 said pressure corresponding to the pressure in the inlet connection 3,
3 when the closing device 5 is closed, and on the side 12 facing away
4 from the valve seat 7 by the pressure in a second pressure chamber
5 11, which is connected with the outlet connection 4 via a channel
6 arrangement 14, in which is located at least one auxiliary valve 15,
7 and with the first pressure chamber 9 via a throttle 13, wherein the
8 channel arrangement 14 ends in a suction nozzle arrangement 18, which
9 is located in the flow path.

10 **Claim 6** depends from claim 1, and further recites the suction
11 nozzle arrangement 18 has a pipe 19, which has a slot 20 in the
12 direction of the outlet connection 4.

13 **Claim 9** depends from claim 1, and further recites the suction
14 nozzle arrangement 18 has an annular nozzle 21 (page 8, line 23),
15 whose opening is directed towards the outlet connection 4.

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2 1. Whether claims 1-5 and 8-10 are anticipated by Tan (U.S.
3 Patent No. 5,687,759) under 35 USC § 102(b).

4

5 2. Whether claims 6 and 7 are obvious over Tan in view of
6 Kubiak (U.S. Patent No. 4,025,045) under 35 USC § 103(a).

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1 (VII) Argument

2 REJECTIONS UNDER 35 USC § 102

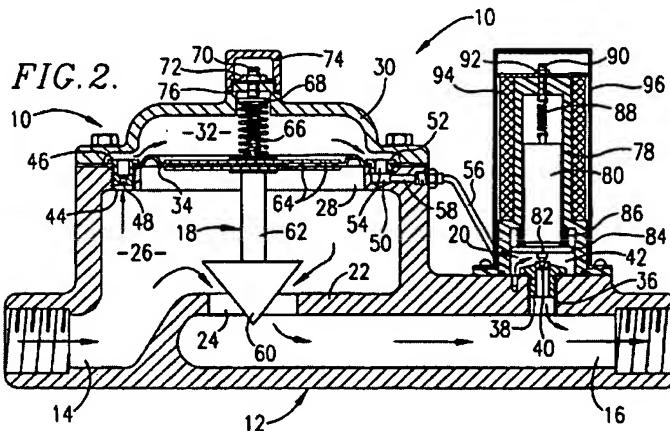
3 An anticipation rejection is improper unless *every* element of the
4 claimed invention is *identically* shown in a *single* reference. *In re Bond*,
5 910 F.2d 831, 15 U.S.P.Q. 1566, 1567 (Fed. Cir. 1990).

6 Claims 1-5 and 8-10 are not anticipated by Tan

7 Claim 1 recites a valve arrangement with a suction nozzle
8 arrangement located in a flow path. Claim 1 also recites that a closing
9 device is located in the flow path, and that the closing device includes
10 a valve seat and a valve element, the valve element being loaded in
11 the direction of the valve seat by a resetting device and being acted
12 upon on the side facing the valve seat by a pressure in a first pressure
13 chamber, said pressure corresponding to the pressure in the inlet
14 connection, when the closing device is closed, and on the side facing
15 away from the valve seat by the pressure in a second pressure
16 chamber, which is connected with the outlet connection via a channel
17 arrangement. More simply, claim 1 identifies the flow path as the
18 *main* flow path through the valve arrangement.

19 Tan does not anticipate claim 1 at least because Tan fails to
20 show or disclose a suction nozzle arrangement, as recited by claim 1.
21 Tan also fails to show or disclose a suction nozzle arrangement,
22 which is located in a flow path, as further recited by claim 1.

1 At most, Tan discloses (at column 3, lines 41-48) a fast-response
2 servovalve 10 having a primary fluid passage, a primary valve 18 for
3 metering flow through the primary fluid passage, and a pilot valve 20
4 for controlling operation of the primary valve 18, as shown in Tan's
5 Figure 2:



6 Tan's pilot valve 20 does not show or disclose a suction valve
7 arrangement. At most, the pilot valve 20 includes a restricted orifice
8 40. The restricted orifice 40 is located entirely outside Tan's primary
9 fluid passage. Consequently, the restricted orifice 40 opens on a
10 region of *maximum* static pressure according to Bernoulli's principle.
11 (See Appellants' Response submitted December 4, 2008, pages 6-8).
12 Thus, Tan's restricted orifice 40 does not provide suction on Tan's
13 control chamber 32, via Tan's fluid passage 58, while Tan's primary
14 valve 18 is fully opened.

16 Since Tan's restricted orifice 40 does not provide suction, Tan's
17 restricted orifice is not a suction nozzle arrangement, as recited by
18 claim 1. Moreover, *neither* Tan's pilot valve 20 *nor* Tan's restricted
19 orifice 40 is in a flow path such as the flow path recited by claim 1.
20 For at least these reasons, Tan fails to anticipate claim 1.

1 Since Tan does not anticipate claim 1, the rejections of claim 1
2 and of dependent claims 2-5 and 8-10 are improper under 35 USC §
3 102. Accordingly, Appellants respectfully request that the improper
4 rejections be reversed.

5 **Claim 2 is not anticipated by Tan**

6 Tan fails to show or disclose at least one suction nozzle, which
7 is directed towards the outlet connection, as recited by claim 2. Tan
8 also fails to show or disclose at least one suction nozzle, which has a
9 bordering wall, whose outside is exposed to the fluid flowing in the
10 flow path, as further recited by claim 2.

11 As discussed with reference to claim 1, Tan shows nothing
12 more than a pilot valve 20 including a restricted orifice 40 that is
13 housed in a threaded opening 36.

14 Appellants respectfully submit that Tan's orifice 40 is not
15 directed "towards the outlet (to the right of element 16)", as Examiner
16 asserted in the Advisory Action issued December 30, 2008. (emphasis
17 added). Rather, as can clearly be seen in Tan's Figure 2, Tan's orifice
18 40 is directed toward a longitudinal axis of Tan's element 16. Thus,
19 even if Tan's orifice 40 was mistakenly considered to be a suction
20 nozzle, Tan still would not show or disclose a suction nozzle directed
21 toward an outlet connection, as recited by claim 2.

22 Additionally, Tan's threaded opening 36 is *not* a bordering wall,
23 whose outside is exposed to the fluid flowing in a flow path, as recited
24 by claim 2. If anything, the *inner surface* of Tan's threaded opening 36
25 is exposed to a fluid. However, Appellants respectfully submit that
26 the fluid within Tan's threaded opening 36 is not flowing in a flow
27 path such as the flow path recited by claim 2. Even if one overlooked
28 the blatant difference between an outside and an *inner* surface, Tan

1 still would not show or disclose a bordering wall, whose outside is
2 exposed to the fluid flowing in a flow path, as recited by claim 2.
3 Thus, Tan fails to identically show or disclose each and every element
4 recited by claim 2.

5 Since Tan does not anticipate claim 2, the rejection of claim 2 is
6 improper under 35 USC § 102. Accordingly, Appellants respectfully
7 request that the improper rejection be reversed.

8 **Claim 3 is not anticipated by Tan**

9 Tan fails to show or disclose a suction nozzle arrangement
10 blocks a fluid entry into the channel, as recited by claim 3.

11 Even if Examiner is correct in comparing Tan's conduit 56 to the
12 channel recited by claims 1 and 3, Tan's pilot valve 20 is not a suction
13 nozzle arrangement. Tan's restricted orifice 40 also is not a suction
14 nozzle arrangement. Moreover, nothing about Tan's pilot valve 20 or
15 restricted orifice 40 blocks a fluid entry into Tan's conduit 56. Thus,
16 Tan fails to identically show or disclose each and every element
17 recited by claim 3.

18 Since Tan does not anticipate claim 3, the rejection of claim 3 is
19 improper under 35 USC § 102. Accordingly, Appellants respectfully
20 request that the improper rejection be reversed.

21 **Claim 8 cannot properly be rejected as anticipated by Tan**

22 35 USC § 132(a) requires that

23 [w]henever, on examination, any claim for a
24 patent is rejected, or any objection or requirement
25 made, the Director *shall* notify the applicant thereof,
26 *stating the reasons for such rejection*, or objection or
27 requirement, together with such information and
28 references as may be useful in judging of the
29 propriety of continuing the prosecution of his
30 application[.]

1 (emphasis added).

2 Examiner rejected claim 8 as anticipated by Tan. However,
3 claim 8 depends from claim 6. Examiner rejected claim 6 as obvious
4 over Tan in view of Kubiak. Thus, Examiner conceded that Tan did
5 not anticipate claim 6, or dependent claim 8.

6 Moreover, Examiner provided no grounds for rejecting claim 8
7 as anticipated by Tan. Thus, the rejection of claim 8 fails to comply
8 with the requirements set forth by 35 USC § 132. Since Examiner has
9 no authority to reject a claim without stating grounds for the
10 rejection, the rejection of claim 8 is improper and must be reversed.

11 **Claim 9 is not anticipated by Tan**

12 Tan fails to show or disclose a suction nozzle arrangement that
13 has an annular nozzle, whose opening is directed towards the outlet
14 connection, as recited by claim 9.

15 Even if Tan's restricted orifice 40 was mistakenly considered to
16 be a suction nozzle, the restricted orifice 40 is *not* directed toward an
17 outlet connection. If anything, Tan shows the restricted orifice 40
18 being directed toward a longitudinal axis of Tan's outlet 16, rather
19 than toward Tan's outlet connection "to the right of element 16" as
20 asserted by Examiner in the Advisory Action issued December 30,
21 2008.

22 Thus, Tan fails to identically show or disclose each and every
23 element recited by claim 9.

24 Since Tan does not anticipate claim 9, the rejection of claim 9 is
25 improper under 35 USC § 102. Accordingly, Appellants respectfully
26 request that the improper rejection be reversed.

1 **Claim 10 is not anticipated by Tan**

2 Tan fails to show or disclose a suction nozzle arrangement,
3 which is located in a section of the flow path with reduced cross-
4 section, as recited by claim 10.

5 As discussed above with reference to claim 1, Tan does not even
6 show or disclose a suction nozzle arrangement located *in a flow path*
7 between an inlet connection and an outlet connection. Much less
8 does Tan show or disclose a suction nozzle arrangement located in a
9 section of a flow path with *reduced cross-section*. With reference to
10 Tan's Figure 2, even if Tan's restricted orifice 40 mistakenly was
11 considered to be a suction nozzle arrangement, and was further
12 mischaracterized as being located in a flow path, Tan fails to show or
13 disclose the restricted orifice 40 being located at a reduced cross-
14 section of a flow path. Thus, Tan fails to identically show or disclose
15 each and every element recited by claim 10.

16 Since Tan does not anticipate claim 10, the rejection of claim 10
17 is improper under 35 USC § 102. Accordingly, Appellants
18 respectfully request that the improper rejection be reversed.

19 **REJECTIONS UNDER 35 USC § 103**

20 An obviousness rejection is improper unless supported by
21 "some articulated reasoning with some rational underpinning". *KSR*
22 *v. Teleflex*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007). A *prima*
23 *facie* case of obviousness under 35 U.S.C. § 103(a) is not established
24 unless the prior art would have taught or suggested the claimed
25 subject matter *as a whole* to a person of ordinary skill in the art, at the
26 time of the claimed invention. *In re Bell*, 991 F.2d 781, 782, 26 U.S.P.Q.
27 1529, 1531 (Fed. Cir. 1993); *In re Rinehart*, 531 F.2d 1048, 1051, 189
28 U.S.P.Q. 143, 146 (CCPA 1976). To establish *prima facie* obviousness

1 of a claimed invention, all the claim limitations must be taught or
2 suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580
3 (CCPA 1974). "All words in a claim must be considered in judging
4 the patentability of that claim against the prior art." *In re Wilson*, 424
5 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

6 **Claims 6 and 7 are not obvious over Tan in view of Kubiak**
7 Claim 6 depends from claim 1.

8 Tan fails to teach or suggest a suction nozzle arrangement, as
9 recited by claim 1. Tan also fails to teach or suggest a suction nozzle
10 arrangement, which is located in a flow path, as further recited by
11 claim 1.

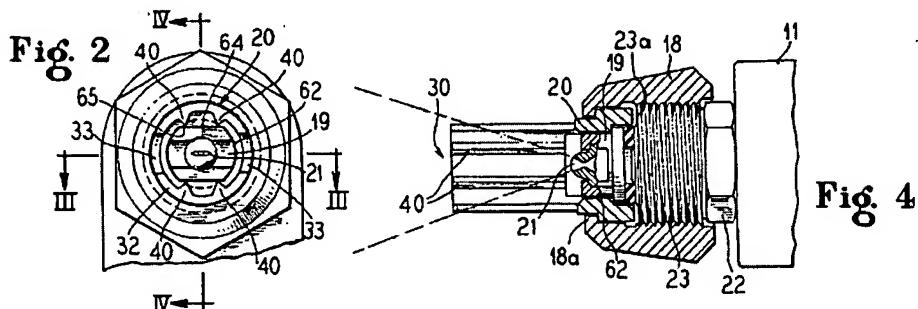
12 At most, Tan teaches a pilot valve 20, which includes a
13 restricted orifice 40. As discussed above, Tan's restricted orifice 40 is
14 not a suction nozzle arrangement. Further, the restricted orifice 40 is
15 not located in a flow path such as the flow path recited by claim 1.

16 Tan fails to teach or suggest any reason why one of ordinary
17 skill, at the time of the claimed invention, would have modified Tan's
18 restricted orifice 40 to provide a suction nozzle arrangement. Tan
19 entirely fails to recognize the benefits of a suction nozzle
20 arrangement. Tan also fails to teach or suggest any reason why one
21 of ordinary skill would have moved Tan's restricted orifice 40 into
22 Tan's primary fluid passage, so as to approach the recitations of claim
23 1. The intended purpose of Tan's servovalve 10 is to provide flow
24 through the primary fluid passage between Tan's inlet 14 and Tan's
25 outlet 16. One of ordinary skill would recognize that moving the
26 restricted orifice 40 into the outlet 16 would undesirably reduce flow
27 through Tan's primary fluid passage (even if only by a small
28 amount). If a proposed modification would render the prior art being

1 modified unsatisfactory for its intended purpose, then there is no
2 suggestion or motivation to make the proposed modification. See
3 MPEP § 2143.01, citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125
4 (Fed. Cir. 1984). Thus, if anything, Tan teaches away from moving the
5 restricted orifice 40 into the primary fluid passage defined by Tan's
6 outlet 16.

7 Kubiak likewise fails to teach or suggest a suction nozzle
8 arrangement, a suction nozzle arrangement located in a flow path, or
9 any reason why one of ordinary skill would have modified Tan to
10 provide the structures recited by claim 1.

11 At most, Kubiak discloses a nozzle guard for airless spray
12 pistols, and in particular discloses a non-circular orifice 21, as shown
13 in Kubiak's Figures 2 and 4:



14
15 Kubiak's non-circular orifice 21 fails to teach or suggest a
16 suction nozzle arrangement, as recited by claim 1. In fact, Kubiak
17 discloses providing an "extremely high pressure" of about 900 to
18 2,900 psi across Kubiak's orifice 21. (See Kubiak, column 1, lines 31-
19 42). Appellants respectfully submit that in view of such a large
20 pressure differential, one of ordinary skill would see no need to
21 provide a suction nozzle arrangement. Additionally, one of ordinary
22 skill would not see any need for modifications to prevent reversal of
23 flow against Kubiak's extremely high pressure differential.

1 Appellants further submit that Examiner has not provided a
2 reasoned statement as required to support a *prima facie* case of
3 obviousness. In particular, Examiner has not provided any reasoning
4 to support Examiner's assertion that one of ordinary skill would be
5 motivated to modify Tan's circular orifice 40, according to Kubiak's
6 oval orifice 21, in order to prevent reversal of flow through the
7 modified orifice. (See Final Office Action issued September 8, 2008,
8 page 4).

9 For at least two reasons, one of ordinary skill would *not* find it
10 "reasonable to modify the orifice of Tan with the teachings of
11 Kubiak" (Final Office Action, page 2) "in order to decrease the
12 possibility of fluid being through the nozzle in the reverse direction"
13 (Final Office Action, page 4).

14 First, Examiner's argument about the shape of an orifice
15 affecting reversal of flow through the orifice is contrary to common
16 sense. One of ordinary skill would recognize that Kubiak's oval
17 orifice 21 is not any more a check valve than is Tan's circular orifice
18 40. Neither orifice in any way prevents reversal of flow or blocks a
19 fluid entry into a channel.

20 Second, the proposed modification would render Tan's orifice
21 40 unsuitable for its intended purpose of restricting flow, since Tan's
22 control plug 82 could not reasonably be expected to reliably seal a
23 non-round orifice. Thus, there would have been no motivation for
24 one of ordinary skill to modify Tan as proposed by Examiner. See *In*
25 *re Gordon*.

26 For at least these reasons, the combination of Tan and Kubiak
27 fails to teach or suggest the recitations of claim 1 as a whole.

1 At least because claims 6-8 depend from claim 1, the
2 combination of Tan and Kubiak also fails to teach or suggest the
3 recitations of claims 6-8.

4 Additionally, claim 6 recites the suction nozzle arrangement of
5 claim 1 has a pipe, which has a slot in the direction of the outlet
6 connection.

7 Neither Tan nor Kubiak, nor even the combination thereof,
8 teaches or suggests a pipe, which has a slot. Further, even the
9 combination of Tan and Kubiak fails to teach or suggest a pipe, which
10 has a slot in the direction of an outlet connection. In this regard
11 Examiner argues that Kubiak's nozzle tip 19 is a pipe. (See Final
12 Office Action issued September 8, 2008, page 2). In response to
13 Examiner's argument, Appellants respectfully direct the Board's
14 attention to the following dictionary definitions:

- 15 • "nozzle (nзl) n. 1. A projecting part with an opening, as at the
16 end of a hose, for regulating and directing a flow of fluid." nozzle
17 - definition of nozzle by the Free Online Dictionary, Thesaurus and
18 Encyclopedia, <http://www.thefreedictionary.com/nozzle> (last
19 visited Feb. 26, 2009).
- 20 • "pipe (pp) n. 1. a. A hollow cylinder or tube used to conduct a
21 liquid, gas, or finely divided solid." pipe - definition of pipe by the
22 Free Online Dictionary, Thesaurus and Encyclopedia,
23 <http://www.thefreedictionary.com/pipe> (last visited Feb. 26,
24 2009).

25 Thus, a nozzle is not a pipe.

26 For at least this additional reason, the combination of Tan and
27 Kubiak fails to teach or suggest the recitations of claim 6.

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1 Since the combination of Tan and Kubiak does not render claim
2 6 obvious, the rejections of claims 6 and 7 are improper under
3 35 USC § 103. Accordingly, Appellants respectfully request that the
4 improper rejections be reversed.

CONCLUSION

Having shown the errors and deficiencies of the present rejections, Appellants respectfully submit that no sufficient reason has been shown why the present claims might not be patentable over the cited prior art. Accordingly, Appellants respectfully urge the Board to reverse the present rejections and to direct that all pending claims be promptly passed to issue.

Attorneys for Appellants hereby authorize the Commissioner to charge the Appeal Brief fee of \$540.00 to our Deposit Account 13-0235. Appellants believe that no additional fees presently are due in the above-identified application. However, the Commissioner is authorized to charge any additional fees that may be required to Deposit Account No. 13-0235.

Respectfully submitted,

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(VIII) Claims Appendix

2 1. A valve arrangement with a housing, an inlet connection and
3 an outlet connection, which are connected with each other via a flow
4 path, in which is located a closing device, which has a valve seat and
5 a valve element interacting with the valve seat, the valve element
6 being loaded in the direction of the valve seat by a resetting device
7 and being acted upon on the side facing the valve seat by a pressure
8 in a first pressure chamber, said pressure corresponding to the
9 pressure in the inlet connection, when the closing device is closed,
10 and on the side facing away from the valve seat by the pressure in a
11 second pressure chamber, which is connected with the outlet
12 connection via a channel arrangement, in which is located at least one
13 auxiliary valve, and with the first pressure chamber via a throttle,
14 wherein the channel arrangement ends in a suction nozzle
15 arrangement, which is located in the flow path.

16
17 2. The valve arrangement according to claim 1, wherein the
18 suction nozzle arrangement has at least one suction nozzle, which is
19 directed towards the outlet connection and has a bordering wall,
20 whose outside is exposed to the fluid flowing in the flow path.

22 3. The valve arrangement according to claim 2, wherein the
23 suction nozzle arrangement blocks a fluid entry into the channel.

25 4. The valve arrangement according to claim 1, wherein the
26 suction nozzle arrangement is connected with the housing in at least
27 two positions.

1 5. The valve arrangement according to claim 1, wherein the
2 suction nozzle arrangement has a body, which is located in extension
3 of a pilot valve seat of the auxiliary valve.

4

5 6. The valve arrangement according to claim 1, wherein the
6 suction nozzle arrangement has a pipe, which has a slot in the
7 direction of the outlet connection.

8

9 7. The valve arrangement according to claim 6, wherein the
10 pipe is connected with the channel on a frontside.

11

12 8. The valve arrangement according to claim 6, wherein the
13 pipe is located in the area of a diameter of the outlet connection.

14

15 9. The valve arrangement according to claim 1, wherein the
16 suction nozzle arrangement has an annular nozzle, whose opening is
17 directed towards the outlet connection.

18

19 10. The valve arrangement according to claim 1, wherein the
20 suction nozzle arrangement is located in a section of the flow path
21 with reduced cross-section.

22

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1 (IX) Evidence Appendix

2 None.

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1 (X) Related Proceedings Appendix
2 None.